Health and Safety Plan for Operable Unit 3-13, Group 5, Post-Record of Decision

1. INTRODUCTION

This health and safety plan (HASP) establishes the procedures and requirements used to minimize health and safety risks to persons working on the Operable Unit (OU) 3-13, Group 5, Snake River Plain Aquifer (SRPA) project. This HASP meets the requirements of the Occupational Safety and Health Administration (OSHA) Standard, 29 Code of Federal Regulations (CFR) 1910.120/1926.65, "Hazardous Waste Operations and Emergency Response" (HAZWOPER). This document's preparation is consistent with information found in the following references:

- National Institute of Occupational Safety and Health (NIOSH)/OSHA/United States Coast Guard (USCG)/U.S. Environmental Protection Agency (EPA) *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities* (NIOSH 1985)
- Bechtel BWXT Idaho, LLC (BBWI), Safety and Health Manuals
- INEEL Manuals for Radiological Controls and Radiation Protection Procedures.

This HASP complies with the authorized safety basis detailed in INTECs authorized safety basis and "Other Industrial" classification per the applicable preliminary hazard assessment, auditable safety analysis, or safety analysis report, if applicable.

This HASP governs all work in support of the OU 3-13, Group 5, Snake River Plain Aquifer Project that is performed by the Idaho National Engineering and Environmental Laboratory (INEEL) personnel and INEEL subcontractors, or employees of other companies. Persons not normally assigned to work at the site, such as representatives of U.S. Department of Energy (DOE), DOE Idaho Operations Office (DOE-ID), the State of Idaho, OSHA, and EPA are considered occasional workers as stated in 29 CFR 1910.120/1926.65.

Prior to sending this document to the Environmental Protection Agency (EPA) and the Idaho Department of Health and Welfare (IDHW), the HASP will be reviewed and revised by the health and safety officer (HSO) in conjunction with the field team leader (FTL), and the INEEL environmental restoration (ER) safety, health, and quality assurance (SH&QA) manager, or designee, to ensure the effectiveness and suitability of this HASP.

1.1 The Idaho National Engineering and Environmental Laboratory

The Idaho National Engineering and Environmental Laboratory (INEEL), formerly the National Reactor Testing Station (NRTS) encompasses an area of 2,305 km^2 (890 mi^2). It is located approximately 55 km (34 mi) west of Idaho Falls, Idaho (see Figure 1-1).

The United States Atomic Energy Commission, now DOE, established the NRTS, now the INEEL, in 1949 as a site for building and testing a variety of nuclear facilities. The INEEL has also been a storage facility for transuranic (TRU) radionuclides and radioactive low-level waste (LLW) since 1952. At present, the INEEL supports the engineering and operations efforts of DOE and other federal agencies in areas of nuclear safety research, reactor development, reactor operations and training, nuclear defense materials production, waste management technology development, and energy technology and

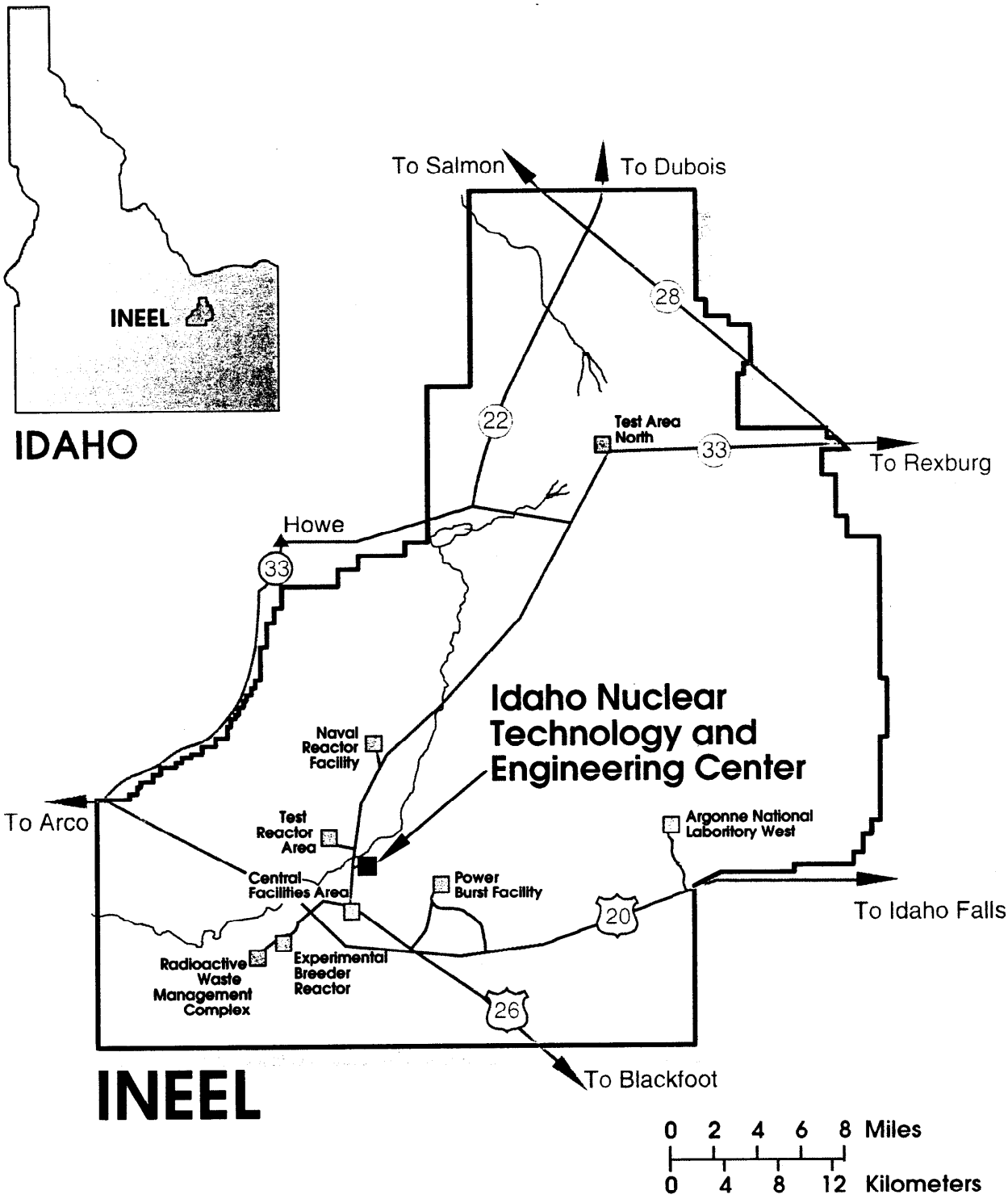

Figure 1-1. Map showing location of INTEC at the INEEL.

conservation programs. The DOE-ID has responsibility for the INEEL, and it designates authority to operate the INEEL to government contractors. BBWI, the current primary contractor for DOE-ID at the INEEL, provides managing and operating services to the majority of the INEEL facilities.

Because of soil and groundwater contamination resulting from past operations at the INEEL, it was placed on the National Priorities List (NPL) in November 1989. A Federal Facility Agreement and Consent Order (FFA/CO) was negotiated and signed on December 9, 1991, with EPA and the IDHW to direct the cleanup activities at the INEEL (DOE-ID 1991). To facilitate management of the cleanup, the INEEL was subdivided into 10 waste area groups (WAGs). This HASP specifically addresses work to be performed at the Idaho Nuclear Technology and Engineering Center (INTEC), a facility within INEEL. The INTEC is designated as WAG 3.

1.2 INTEC Site Description

The INTEC, previously named the Idaho Chemical Processing Plant (ICPP), has been in operation since 1954. The INTEC has historically been a uranium reprocessing facility for defense projects and for research and storage of spent nuclear fuel (SNF). In 1992, the DOE phased out the reprocessing operations and rescoped the mission to (1) receive and temporarily store SNF and other radioactive wastes for future disposition, (2) manage waste, and (3) perform remedial actions. Figure 1-2 is a map of INTEC.

A comprehensive operable unit, OU 3-13, was established to provide an overall evaluation of previously identified release sites at the INTEC. During 1997, a remedial investigation (RI) and baseline risk assessment (BRA) was completed (DOE-ID 1997). The RI/BRA identified contaminants in the HI interbed in perched groundwater and in groundwater in the SRPA, designated in WAG 3 as Group 5. The contaminants detected are identified and discussed later in this HASP in Section 8, Hazard Assessment.

Subsequent to the RI/BRA, an evaluation of remedial alternatives was made in a feasibility study (FS) and the selected alternatives were described in the OU 3-13 Record of Decision (ROD) (DOE-ID 1999). This HASP was prepared to support post-ROD monitoring to be implemented as part of the remedial actions for the SRPA.

1.3 Remedial Actions for Perched Water and the Snake River Plain Aquifer

1.3.1 Perched Water

Perched water occurs at depths ranging from 30.5 to 128 m (100 to 420 ft) below ground surface (bgs) beneath the INTEC. This perched water is the result of local recharge from the INTEC percolation ponds, Sewage Treatment Plant discharge, the Big Lost River, precipitation, and possibly from facility water lines and steam condensate discharge. The perched water is locally contaminated by the downward transport of contaminants from overlying soils and from waste disposal from a former onsite injection well.

The perched water remedial action specified in the ROD is designed to reduce the volume of water in the perched zone and minimize contaminated perched water migration to the SRPA. This will be accomplished largely from closure of the existing percolation ponds and institutional controls that restrict access to the perched water zones.

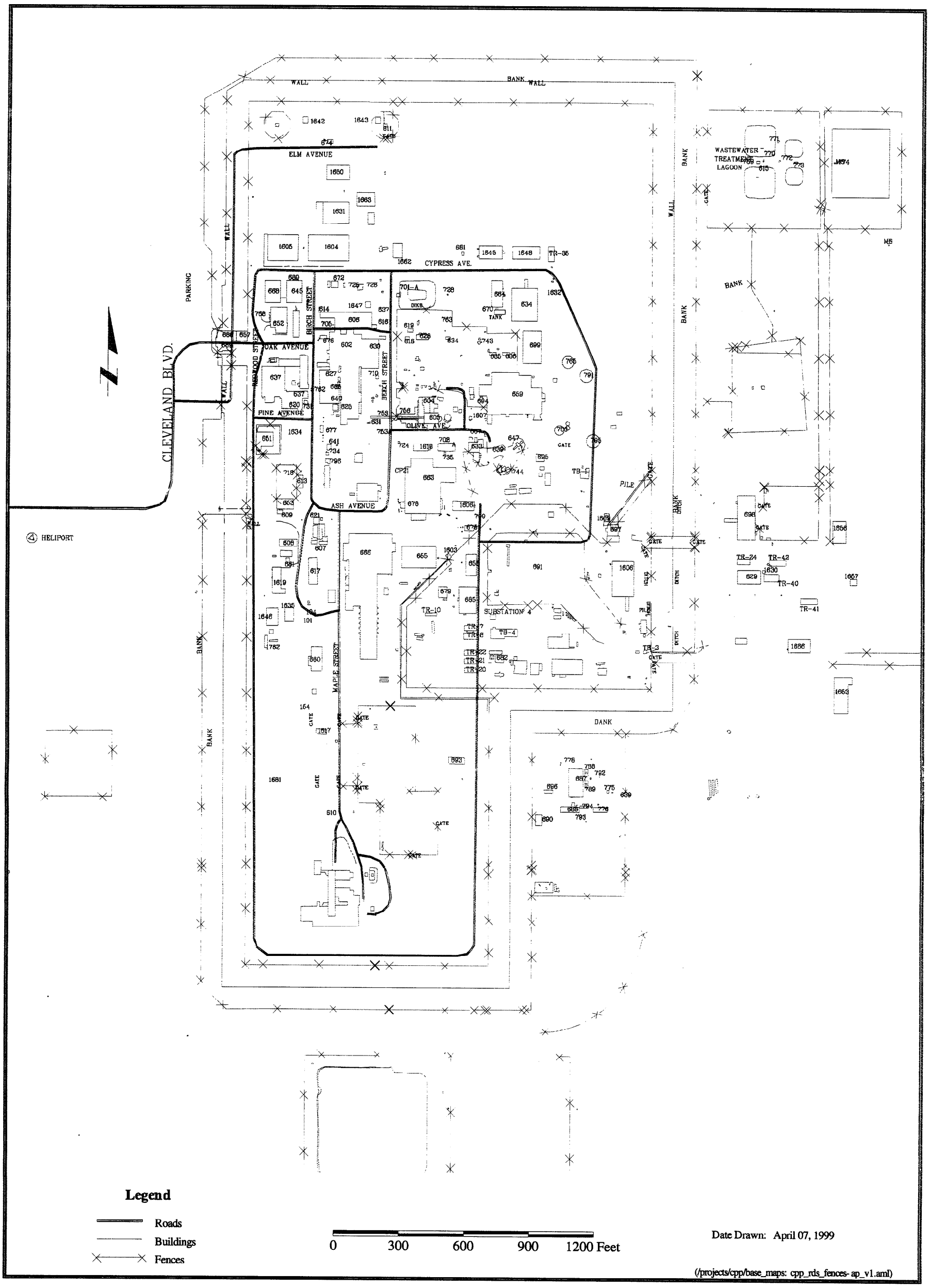

Figure 1-2. Map of INTEC.

1.3.2 Snake River Plain Aquifer

Contamination in the SRPA resulted primarily from historic waste disposal practices at INTEC. For a number of years, an injection well was used to dispose liquid process wastes into the SRPA. The selected SRPA alternative is institutional controls with monitoring and contingent remediation. This alternative accomplishes the following: restricts access to the SRPA within the groundwater plume boundaries using institutional controls to prevent exposure to contaminants, provides for continued monitoring of the contaminant plume to determine if contaminant concentrations exceed a specified action level, and requires treatability studies and active remediation if those action levels are exceeded.

1.4 Scope of Work

Two primary activities will be implemented under the Group 5 project. The first activity is an evaluation of the model-predicted hot spot within the HI sedimentary interbed to check the WAG 3 RI/FS numerical model accuracy and update the model predictions for contaminant of concern (COC) concentrations in 2095 and beyond. The collection of data to support this task is described in the Plume Field Sampling Plan (FSP) (DOE-ID 2000a). The second activity is ground water monitoring activities to evaluate flux of COCs to Group 5 from the INTEC perched water and vadose zone (OU 3-13, Group 4) and the SRPA beneath the INTEC facility. The collection of data to support this ground water COC trend monitoring is discussed in the Group 5 Long Term Monitoring Plan (LTMP) (DOE-ID 2000b). A brief description of each activity is presented below.

The Group 5 HI interbed program will include the coring of boreholes, the collection of HI sedimentary interbed samples for chemical and geotechnical analysis, lithologic and geophysical logging of coreholes, collection of aquifer water samples with straddle packers, and pump testing zones to evaluate production capacity. The basic objective of the plume FSP is to evaluate whether or not the OU 3-13 RI/FS modeling is accurate in predicting that a hot spot of primarily I-129 exists south of INTEC in the vicinity of wells USGS 111 and USGS 113 which is of sufficient magnitude to exceed MCLs in 2095 and beyond. This will involve the deepening and sampling of four existing wells and installation of one new well in the vicinity of the model predicted hot spot to evaluate the occurrence and magnitude of the predicted hot spot. Samples for chemical analysis of the COCs will be collected from interbed materials, as will samples for physical and geotechnical analysis. The samples will provide empirical data on the presence of I-129 in the SRPA and physical properties of the HI interbed south of INTEC to support refinement of the ground water model. Following drilling, vertical profile sampling for the collection of groundwater samples will be conducted on the five boreholes using a straddle packer system. If results of the vertical profiling indicate the presence of "hot" zones where COC action levels are exceeded, additional pump testing may be required to evaluate production capacity of the specific "hot" zones. Figure 1-3 presents locations of existing wells to be deepened and the new borehole to be installed. This information will be analyzed to generate a volumetric estimate of hot spot where concentrations are predicted to exceed MCLs in 2095 and beyond.

The basic objective of the LTMP actions is to evaluate the flux of contaminants into the SRPA outside of the INTEC security fence line (Group 5) from contamination that is currently in the vadose zone and aquifer beneath the footprint of the INTEC facility. These data will be evaluated over time to determine if the flux of COCs into Group 5 will result in exceeding MCLs in 2095 and beyond. This will be accomplished through the sampling aquifer monitoring wells in the vicinity and downgradient of INTEC to track COC concentration trends through the institutional control period. The initial baseline-sampling event will include all wells at and down gradient of WAG 3 to the CFA Landfills (approximately 47 wells). Following the baseline sampling, a selected set of 18 wells will be sampled under the LTMP. Figure 1-4 identifies the selected aquifer wells for long-term monitoring.

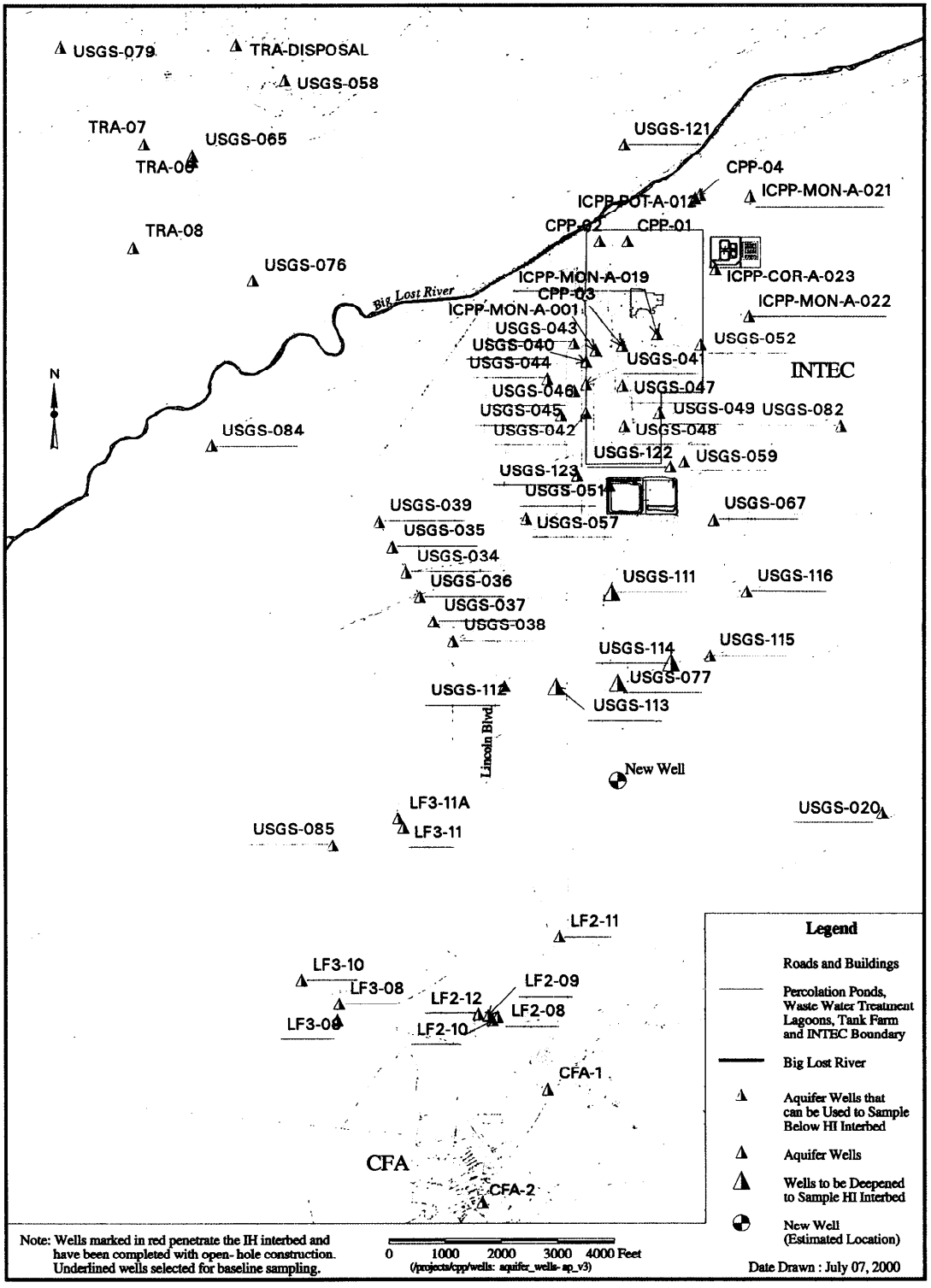

Figure 1-3. Location of wells to be deepened and proposed location of one new well.

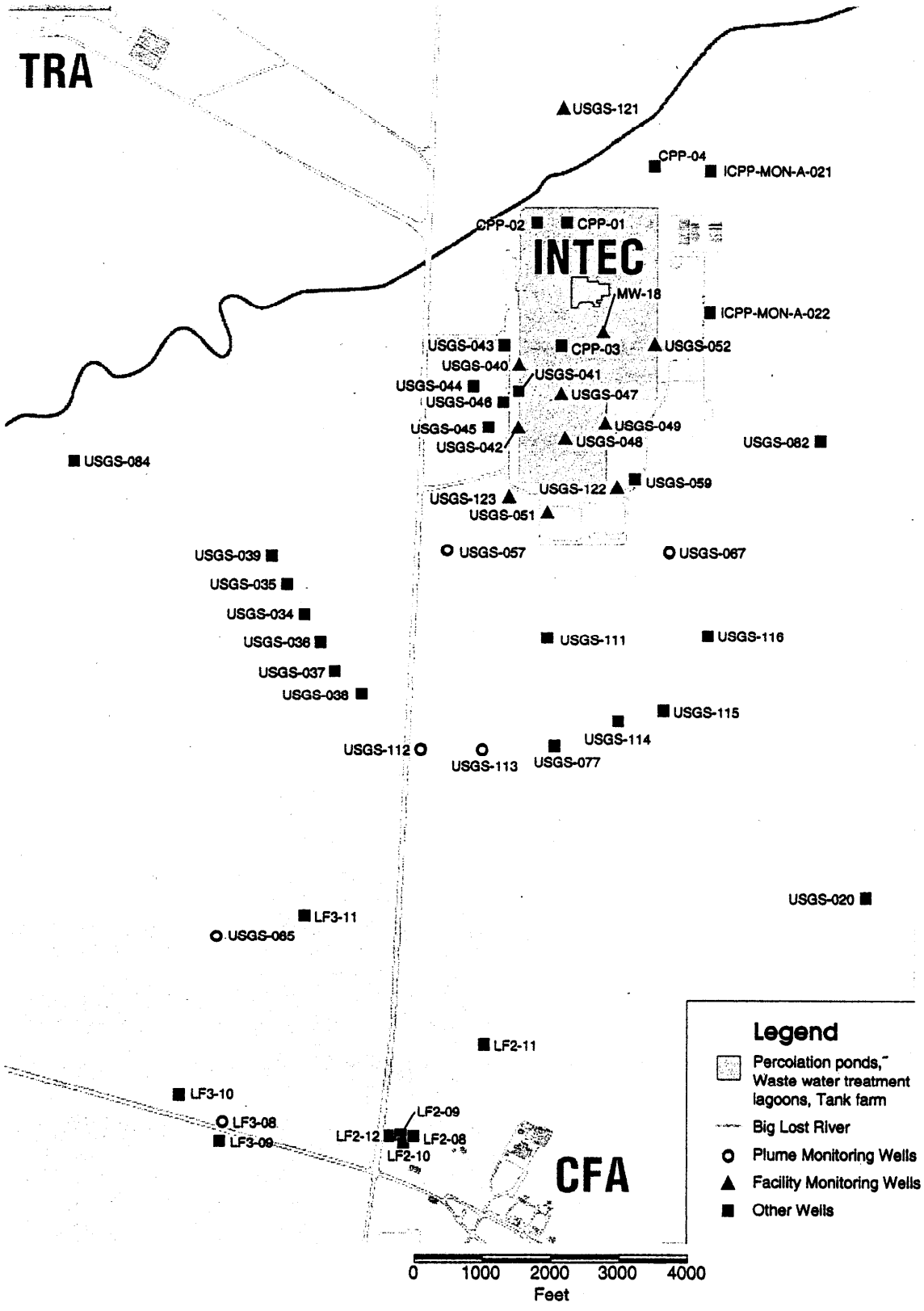

Figure 1-4. INTEC groundwater wells for long-term monitoring.

2. KEY SITE PERSONNEL RESPONSIBILITIES

The organizational structure for this project reflects the required resources and expertise to perform the work, while minimizing risks to worker's health and safety, the environment, and the public. Key positions at the site and lines of responsibility and communication are shown on the organizational chart for the site (Figure 2-1). The following sections outline the responsibilities of key site personnel.

2.1 Nonfield Support Staff

2.1.1 Environmental Restoration Director

The INEEL ER director has the ultimate responsibility for the technical quality of all projects, maintaining a safe environment, and the safety and health of all personnel during field activities performed by or for the ER Program (ERP). The ER director provides technical coordination and interfaces with the DOE-ID Environmental Support Office. The ER director ensures the following:

- Project/program activities are conducted according to all applicable federal, state, local, and company requirements and agreements
- Program budgets and schedules are approved and monitored to be within budgetary guidelines
- Personnel, equipment, subcontractors, and services are available
- Direction is provided for the development of tasks, evaluation of findings, development of conclusions and recommendations, and production of reports.

2.1.2 Environmental Restoration SH&QA Manager

The ER SH&QA manager or designee responsibilities are to manage their resources to ensure that SH&QA programs, policies, standards, procedures, and mandatory requirements are planned, scheduled, implemented and executed in the day-to-day operations for the ERP at the INEEL. The manager directs the SH&QA compliance accomplishment of all activities by providing administrative technical/administrative direction to subordinate staff and through coordination with related functional entities. The ER SH&QA manager reports directly to the ER director. Under the ER director's guidance, the ER SH&QA manager represents the ER directorate in all SH&QA matters. This includes responsibility for ERP's SH&QA management compliance and oversight for all ER Comprehensive Environmental, Response, Compensation, and Liability Act (CERCLA) and decontamination, dismantlement, and decommissioning operations planned and conducted at all WAGs, including WAG 3, INTEC, and for ERP INEEL-wide environmental monitoring activities.

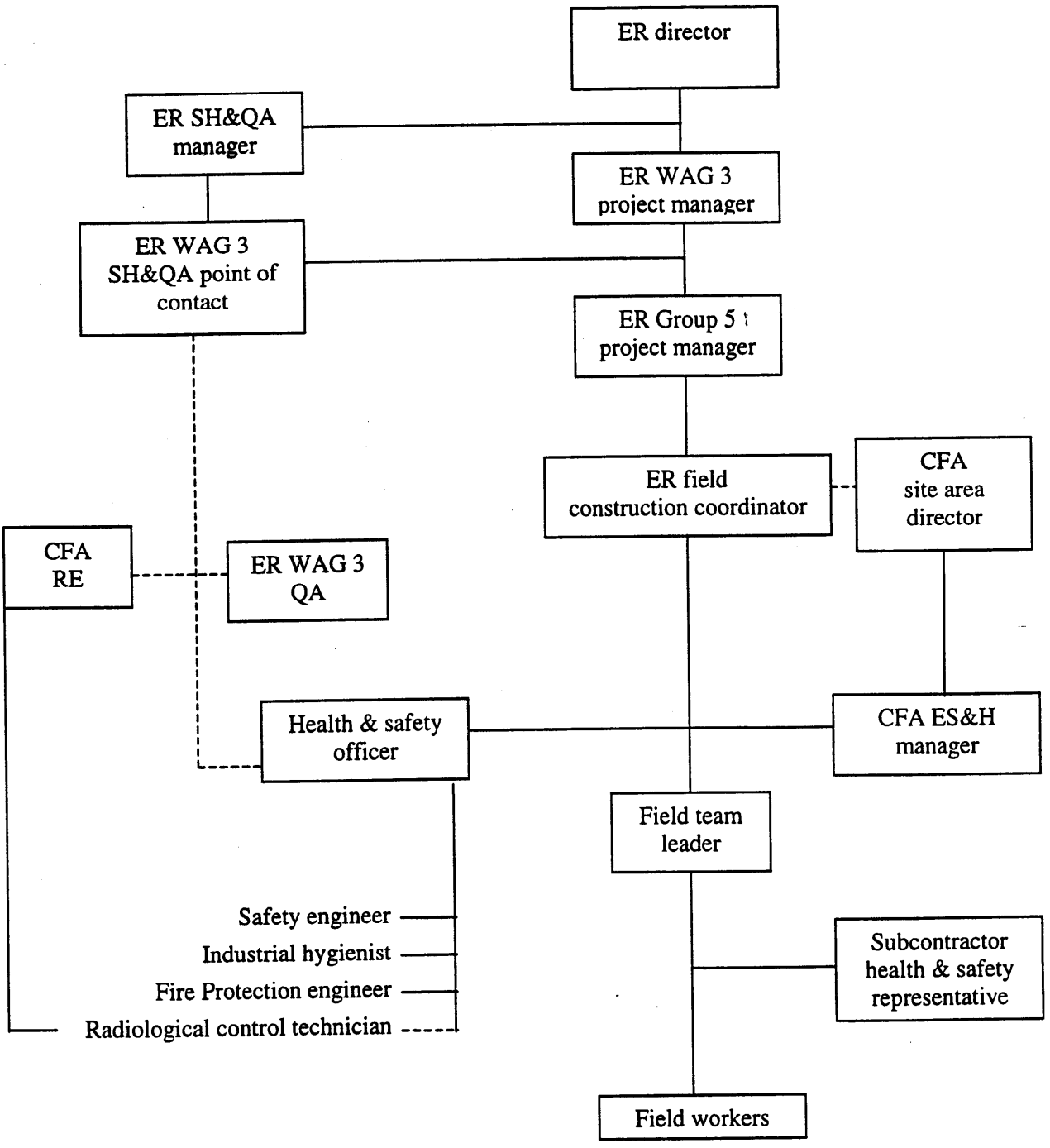

Figure 2-1. Field organization chart for the WAG 3, OU 3-13, Group 5.

The ER SH&QA manager is responsible for the management of the following technical disciplines and implementation of the programs related to these disciplines on this project:

- Radiological controls (RadCon) personnel
- Support personnel
- Safety engineer (SE)
- Fire protection personnel
- Quality assurance (QA) personnel
- Industrial hygiene (IH) personnel (matrixed)
- Emergency preparedness personnel (matrixed).

2.1.3 Environmental Restoration WAG 3 Manager

The BBWI ER WAG 3 manager shall ensure that all activities conducted during the project comply with the BBWI MCPs and program requirements directives (PRDs); all applicable OSHA, EPA, DOE, U.S. Department of Transportation (DOT), and State of Idaho requirements; and that tasks comply with Plan (PLN)-125, "Quality Program Plan for the Environmental Restoration Program" for the preparation, field, laboratory, and modeling activities. The WAG 3 manager is responsible for the overall work scope, schedule, and budget. The WAG 3 Manager will ensure that an Employee Job Function Evaluation (Form-340.02) is completed for all project employees, reviewed for validation by the project IH, and then submitted to the Occupational Medical Program (OMP) for determination of whether or not a medical evaluation is necessary.

2.1.4 Environmental Restoration Group 5 Project Manager

The environmental restoration (ER) project manager (PM) will ensure that all activities conducted during the project comply with INEEL MCPs and program requirements directives (PRDs); all applicable OSHA, EPA, DOE, U.S. Department of Transportation (DOT), and State of Idaho requirements; and that tasks comply with PLN-125, the quality assurance project plan (QAPjP) (DOE-ID 2000c), this HASP, and the sampling and analysis plan (SAP). The PM is responsible for coordination of all document preparation, field, laboratory, and modeling activities. The INEEL PM is responsible for the overall work scope, schedule, and budget. The INEEL PM will ensure that an Employee Job Function Evaluation (Form 340.02) is completed for all project employees, reviewed by the project IH for validation, and then submitted to the Occupational Medical Program (OMP) for determination of whether a medical evaluation is necessary.

2.1.5 Environmental Restoration WAG 3 SH&QA Point of Contact

The ER WAG 3 SH&QA point of contact (POC), or designee, is responsible for managing SH&QA resources to ensure that SH&QA programs, policies, standards, procedures, and mandatory requirements and planned, scheduled, implemented, and executed in the WAG 3 day-to-day operations. The SH&QA POC directs the SH&QA compliance activities by providing technical and administrative direction to project staff and through coordination with related INTEC SH&QA functional entities. The ER WAG 3 SH&QA POC reports directly to the WAG 3 manger. Under the direction of the WAG 3

manager, the WAG 3 SH&QA POC represents the WAG in all SH&QA matters. This includes assisting the WAG 3 manager in being responsible for WAG 3 SH&QA compliance and oversight for CERCLA operations planned and conducted at the INTEC.

2.1.6 ER Environmental Coordinator

The assigned ER environmental coordinator oversees, monitors, and advises the PM and FTL performing site activities on environmental issues and concerns by ensuring compliance with DOE orders, EPA regulations, and other regulations concerning the effects of site activities on the environment. The ER environmental coordinator provides support surveillance services for hazardous waste storage and transport, and surface-water/storm-water runoff control.

2.1.7 ER Quality Engineer

A quality engineer provides guidance on the site quality issues. The quality engineer observes site activities and verifies that site operations comply with quality requirements pertaining to these activities. The quality engineer identifies activities that do not comply or have the potential for not complying with quality.

2.2 Job-Site Personnel

2.2.1 Environmental Restoration Field Construction Coordinator

The ER field construction coordinator (FCC) is the individual with ultimate responsibility for the safe and successful completion of assigned project tasks. The ER FCC manages field operations, executes the work plan, enforces site control, and documents site activities; and may at the start of the shift conduct the daily prejob safety briefings. Health and safety issues at the site in respect to safety issues must be brought to the HSO and ER FCC's attention.

If the ER FCC leaves the site, an alternate individual will be appointed to act as the ER FCC. Persons acting as ER FCC on the site must meet all ER FCC training requirements outlined in Section 4 of this HASP. The identify of the acting ER FCC shall be conveyed to site personnel, recorded in the ER FCC daily force report and communicated to the facility representative when appropriate.

2.2.2 Field Team Leader

The FTL represents the ER organization at the site with delegated responsibility for the safe and successful completion of the project. The FTL works with the PM to manage field sampling operations and to execute the work plan. The FTL enforces site control, documents activities, and may conduct the daily safety briefings at the start of the shift. Health and safety issues may be brought to the attention of the FTL.

If the FTL leaves the site, an alternate individual will be appointed to act as the FTL. Persons acting as FTL on the site must meet all the FTL training requirements outlined in Section 4 of this HASP. The identity of the acting FTL will be conveyed to site personnel, recorded in the FTL logbook, and communicated to the facility representative, when appropriate. The FTL may also serve as the project geologist.

2.2.3 ER Health and Safety Officer

The health and safety officer (HSO) is the person assigned to the site who serves as the primary contact for health and safety issues. The HSO advises the PM and FTL on all aspects of health and safety and is authorized to stop work at the site if any operation threatens worker or public health and/or safety. The HSO may be assigned other responsibilities, as stated in other sections of this HASP, as long as they do not interfere with the primary responsibilities. The HSO is authorized to verify compliance to the HASP, conduct inspections, require and monitor corrective actions, monitor decontamination procedures, and require corrections, as appropriate. The HSO is supported by SH&QA professionals at the site (safety engineer, IH, RCT, RE, environmental coordinator, and facility representative, as necessary).

Persons assigned as the HSO, or alternate HSO, must be qualified (per the OSHA definition) to recognize and evaluate hazards, and will be given the authority to take or direct actions to ensure that workers are protected. While the HSO may also be the IH, SE, or the FTL (depending on the hazards, complexity, size of the activity involved, and required concurrence from the ER SH&QA manager) at the site, other HSO's site responsibilities must not conflict (philosophically or in terms of significant added volume of work) with the HSO's primary role. If it is necessary for the HSO to leave the site, an alternate individual will be appointed by the HSO to fulfill this role. The identity of the acting HSO will be recorded in the logbook and site personnel will be notified.

2.2.4 Occasional Workers

All persons who may be on the site, but are not part of the field team, are considered occasional workers for the purposes of this project (e.g., surveyor, equipment operator, or other crafts personnel not assigned to the project). A person will be considered "onsite" when they are present in or beyond the designated support zone (SZ). Occasional workers will be deemed occasional site workers per 29 CFR 1910.120/1926.65, and shall meet minimum training requirements and any additional site-specific training that is identified in Section 4. If the nature of an occasional worker's tasks requires entry into the exclusion zone (EZ), or radiologically controlled areas (RCAs), then they must meet all the same training requirements as other field team members. In addition, a site representative must accompany all occasional workers until they have completed three days of supervised field experience.

2.2.5 Visitors

All visitors with official business at the site, including INEEL personnel, representatives of DOE, and/or state or federal regulatory agencies may not proceed beyond the SZ without receiving site-specific HASP training, signing a HASP training acknowledgment form, receiving a safety briefing, wearing the appropriate personal protective equipment (PPE), and providing proof of meeting all training requirements specified in Section 4 of this HASP. A fully trained site representative (such as the FTL, JSS, or HSO, or a designated alternate) will escort visitors at all times while on the site. A casual visitor to the site is a person who does not have a specific task to perform or other official business to conduct at the site. Casual visitors are not permitted on the site.

2.2.6 Job-Site Supervisor

A subcontractor job-site supervisor (JSS) will accomplish some of the logging tasks during the project. The subcontractor JSS serves as the subcontractor safety representative at the site. The subcontractor JSS may also serve as the subcontractor PM. The subcontractor JSS is the subcontractor field supervisor for subcontractor personnel assigned to work at the site. The subcontractor JSS and FTL work as a team to accomplish day-to-day operations, identify and obtain additional resources needed at the site, and interact with the HSO, IH, safety engineer, radiological engineer, and radiological control

technician on matters regarding health and safety. The JSS, like the FTL, must be informed about any health and safety issues that arise at the site and may stop work at the site if an unsafe condition exists. The subcontractor JSS will provide information to the FTL regarding the nature of their work for input at the daily prejob briefing.

2.3 CFA Support Staff

2.3.1 CFA Site Area Director

The CFA site area director reports to the director of site operations and interfaces with the CFA facility manager. The CFA site area director is responsible for several functions and processes within the CFA-controlled areas that include the following:

- Performing all work processes and work packages
- Establishing and executing a monthly, weekly, and daily operating plan
- Executing the ES&H program
- Executing the Integrated Safety Management System
- Executing the enhanced work planning
- Executing the Voluntary Protection Program
- Maintaining all environmental compliance
- Executing that portion of the voluntary compliance order that pertains to the CFA-controlled area.

2.3.2 Facility Manager

The CFA's facility manager is responsible to maintain his/her assigned facility and must be cognizant of work being conducted in the facility. The CFA facility manager is responsible for the safety of personnel and the safe completion of all project activities conducted within his/her area. Therefore, the facility manager and CFA shift supervisor (SS) will be kept informed of all activities performed in the area. The SS and FTL will agree on a schedule for reporting work progress and plans for work. The SS may serve as advisor to site personnel with regard to his/her or the SS's area of operation.

2.3.3 Radiological Engineer

The radiological engineer (RE) is the primary source for information and guidance relative to the evaluation and control of radioactive hazards at the site. The RE will provide engineering design criteria and review of containment structures and makes recommendations to minimize health and safety risks to site personnel. Responsibilities of the RE include the following: performing radiation exposure estimates and as low as reasonably achievable (ALARA) evaluations, identifying the type(s) of radiological monitoring equipment necessary for the work, advising the FTL and RCT of changes in monitoring or PPE, and advising personnel on the site evacuation and reentry. The RE may have other duties to perform as specified in other sections of this HASP or in the Company Manual 15A, *Radiation Protection Manual,* or Company Manual 15B, *Radiation Protection Procedures.*

2.3.4 Radiological Control Technician

The RCT is the primary source for information and guidance on radiological hazards and will be present at the site during all operations. Responsibilities of the RCT include radiological surveying of the site, equipment, and samples; providing guidance for radioactive decontamination of equipment and personnel; and accompanying the affected personnel to the nearest INEEL medical facility for evaluation if significant radionuclide contamination occurs. The RCT must notify the FTL and HSO of any radiological occurrence that must be reported as directed by Company Manuals 15A and 15B. The RCT may have other duties at the site as specified in other sections of this HASP or in INEEL PRDs and/or MCPs.